

A P P E N D I X 1 2

THE LOCKHEED ELECTRA L188 – PROBLEMS & RECTIFICATION

In ancient legend, Electra was the daughter of Agamemnon and Clytemnestra. With her brother, Orestes, she planned to kill the mother she blamed for her father's death. Electra translates from the Greek as the *bright one*.

The Lockheed employee who suggested the Electra name had a prophetic insight that brought his company close to bankruptcy. The Electra L188 was a *bright one* with the unfortunate vengeful trait of her mythological ancestor.

The Electra's reliability continued to disappoint Cathay Pacific. Most of the breakdowns occurred to the complex electrical system. Then disturbing gossip spread from the States. In March, rumour became confirmation when the Federal Aviation Agency (FAA) issued this advice:

The Tell City crash is now sufficiently similar to a previous accident of the same type aircraft last September near Buffalo, Texas, to justify operating restrictions pending further investigation. With immediate effect restrict speed to 275 knots at or below 15,000 feet, and to 260 knots above.
General Elwood L. Quesada, Administrator, FAA.

Sixty-three persons perished in a Northwest Airlines crash near Tell City, Indiana, on March 7, 1959. In September, a crash near Buffalo cost 34 lives. Eye-witness reports said the Electra, owned by Braniff International, disintegrated in flight. In each crash the investigators found one wing several miles from the impact site, suggesting separation at altitude.

The cause seemed to suggest *clear air turbulence*. This can occur near jet streams and in regions where hot and cold air masses meet. It is possibly the most serious weather condition the aviator can encounter, for radar cannot detect it. The only warning is a sudden change of temperature. When the pilot interprets this there is no time to reduce airspeed, the only safe method of negotiating this phenomenon.

Senator Vance Hartke charged General Quesada with rejecting the Civil Aeronautics Board's proposal that all uninspected Electras should be grounded. His argument: *When a type flies only ten per cent of the total hours and accounts for 76 per cent of the deaths its safety record is not good!*

The engineers investigating the Buffalo crash found hair-line cracks in the small tabs that connect the outer wing surface to its inner framework. The investigators returned to the Tell City wreckage where they found similar cracks. Still Quesada resisted grounding the type. He ordered a further reduction in speed to 225 knots and prohibiting auto-pilot operation pending modifications. His department had learned some Electra auto-pilots had malfunctioned, producing porpoising of noticeable magnitude.

AIRPORT OF THE NINE DRAGONS, KAI TAK, KOWLOON

The *Daily Telegraph* of May 5 continued to speculate. The reporter coupled the clear-air turbulence theory with a *strange harmonic* coming from the outboard engines that, at certain speeds, produced wing vibration. This reporter had a good grasp of aerodynamics – his theory came close to the mark!

Lockheed spent US\$25 million solving the problems. One test included testing to destruction a new Electra worth US\$1,750,000. The defect was a weakness in the mounts that held the engines in their nacelles. Investigations proved a hard landing or extreme turbulence could damage these mounts, causing the engine to shift. At a certain speed vibration caused more strain on the mounts and a chain reaction transmitted engine movement to the wing. The culmination of this reaction was a flutter so violent that the wing separated from the fuselage.

The modifications added 1,400 lbs of metal reinforcement to key areas. A further suggestion was to install flight recorders. The previous *black box* requirement excluded planes operating below 25,000 feet, so it then applied only to pure jets.

The Lockheed vice-president asked the 13 airlines operating 136 Electras to share in modification costs. When only two agreed Lockheed decided to bear the full cost of modification. The only stipulation was the airlines must be responsible for ferry costs to and from Burbank.

Cathay Pacific had an additional problem when inspection found organic fungus growing in the fuel tanks, filters and pumps. A closer check found the spore on the wing's inner skin and planks – resulting in corrosion. Not all operators had experienced this problem. It seemed to occur only in Electras operating in humid climates.

On December 4, in an operation called *Leap*, Captain Phil Blown flew Electra VR-HFN to Burbank through Tokyo, Wake Island and Honolulu. VR-HFO followed three days later commanded by Pat Armstrong.

In command of the return flight was Tony Rignall. I was his co-pilot with F/O Brian Floyd, F/E's Stan Pain and Len Hawkes completing the crew. The passengers were Harry Smith of HAEC and Alan Pratt of the Department of Civil Aviation. The flight got off to a less than promising start. Strong head-winds forced us to turn back at the *November Ocean* weather ship. These adverse winds kept us grounded for nine days before they eased. My part in *Leap* ended on February 4, 1961, when I landed VR-HFN at Kai Tak.

During the Electra modifications Cathay wet-leased a Bristol Britannia 102 from BOAC. G-ANBO operated 79 round trips, 16 of them on the Hong Kong to Sydney route.

The Electra never again gave the company cause to regret having chosen them. There were, however, a couple of incidents.

On February 28, between Sydney and Darwin, Captain Lawrie King, in severe turbulence, took a heavy lightning strike. On descent into Darwin the ray dome collapsed producing violent vibration. Lawrie reduced the speed and landed without difficulty.

At the height of the Vietnamese confrontation Tan Son Nhut Airport, Saigon, handled a movement at 20-second intervals. Captain Leonard *Len* Cowper's Electra touched down in this controlled confusion. A malfunctioning reserve caused an asymmetric condition that veered his plane from the runway's centre line. His plane stopped with the nose and left wheels in the soft grass. A United States Air Force colonel arrived in a jeep accompanied by a bulldozer. He gave Len 30 seconds to get his plane off the runway and signalled his *dozer* into position. Len beat the deadline!

When QANTAS introduced the 707 Cathay Pacific Airways could not compete. Cathay withdrew the type and leased their Australian traffic rights to BOAC. On November 3, the final Electra service left Sydney under my command.